III. Maintenance and Operation

DPWES inspects and maintains dry ponds located within residential subdivisions, regional ponds, underground chambers, percolation trenches, and rain gardens. In addition, DPWES performs inspections and enforces maintenance for privately maintained facilities including wet ponds, dry ponds, underground detention, sand filters, oil/grit separators, percolation trenches, inlet treatment devices, rooftop storage, and all commercial and/or industrial detention facilities.

Structural and Source Controls

County Maintained Stormwater Management Facilities

As of December 31, 2004, there were 1,127 stormwater management facilities maintained by the county. The current inventory includes 995 on-site ponds, 38 regional dry ponds, 47 underground chambers, 33 percolation trenches, five regional wet ponds, six bio-retention areas, two manufactured BMPs, and one wetland. Last year the county inspected each DPWES-maintained facility at least once, mowed 530 dam embankments, and performed 291 maintenance work orders to correct deficiencies. No state or federal permits were required to perform this work. The mowing of retention and detention facilities continued to be limited to the dam embankments and other critical areas. These reduced mowing limits allow vegetation in the pond floor to provide for enhanced nutrient and absorption rates. To ensure overall program effectiveness, a visual inspection of each facility was conducted during each maintenance activity in addition to the scheduled inspections. When critical deficiencies were identified by maintenance personnel, follow-up investigations were then coordinated with engineering staff to ensure issues were resolved appropriately.

Privately Maintained Stormwater Management Facilities

In addition to the county maintained facilities, there were 2254 privately maintained facilities in the private inventory as of December 2004. The inventory included 282 wet ponds, 460 dry ponds, 114 sand filters, 52 manufactured BMPs, 336 percolation trenches, 554 roof top detention areas, 46 parking lot detention areas, 380 underground detention facilities, and six bio-retention areas. These facilities are routinely scheduled for inspection conducted by DPWES staff with the goal of performing a thorough inspection of each facility at least once every 5 years within the permit period. A total of 457 facilities (20%) were inspected in 2004. A detailed inspection report, with photographs and GIS maps, is provided to each owner upon completion of each inspection. The county continued ramping up its efforts to ensure privately maintained facilities are maintained and operated consistent with industry standards. Education of owners/operators of stormwater management facilities continues to be effective in achieving the desired level of service for these facilities.

State-Regulated Dam Facilities

Currently there are six state-regulated dams maintained by the county; all are located within Pohick Creek Watershed. However, as a result of legislation changes in 2002, there are an additional nine facilities that the county is working on to comply with the state's standards. These nine facilities are being studied to determine what, if any, remedial measures need to be taken to ensure that they meet the state's criteria for dam safety. The studies include inspections, hydraulic analysis, dam breach analysis, and geotechnical analysis.

Combined, the six Pohick facilities serve a watershed area of 22,690 acres with an estimated population of 100,000 residents. DPWES staff and representatives from Natural Resources Conservation Services (NRCS) and NVSWCD formally inspect all PL-566 facilities in the fall of every year. The purpose of this formal inspection is to identify any safety or operational items in need of corrective action. In addition, a

biennial inspection is conducted by an engineering firm under contract with the county or by in-house professional engineering staff with expertise in dam design and construction. These inspections satisfy state requirements for dam safety. State issued operating permits are valid for six years and must be reissued at the end of each permitting period. Permit reissuing is tied to the most recent biennial inspection and its attached operation and maintenance plan. Based on these formal inspections, as well as other less formal inspections, a work program to correct deficiencies and address maintenance items is established and implemented. Critical items such as the stability of the dam embankment and the functioning of the water control structures are addressed on a priority basis. Routine items such as mowing are accomplished on a scheduled basis, currently five times per year.

Stormsewer Infrastructure Management

A Stormsewer Infrastructure Management Plan and Schedule (***Appendix E***) was submitted on July 24, 2002, in accordance with the permit and updated on February 2, 2005. During 2004, 69 tax maps were field verified and 90 were digitized.

Storm Sewer Inventory Digitizing

The inventory of stormwater management and storm sewer facilities is documented and tracked through the use of the county's mapping system. The county's 400-square-mile jurisdiction is currently divided into 440 tax map grids; each grid encompasses a surface area of approximately one square mile. The documented inventory of storm drainage infrastructure is being digitized in a Geographic Information System (GIS) format for management and identification purposes. As of December 31, 2004, 250 tax map grids have been digitized.

Storm Sewer Maintenance Survey

In 2004, 169 miles of county-maintained storm sewer were field verified as to location and inspected for deficiencies. As a result of the information gathered 612 work orders were written to correct deficiencies.

Roadways and Parking Lots

The county maintains public facilities such as libraries, fire stations, governmental centers, park and ride lots, and a number of road segments totaling approximately five miles in cumulative length. Many of these segments are without curb and gutter or catch basins. In an effort to limit the discharge of sand and deicing materials into the county's streams, only those roadway lengths determined to pose a safety hazard are treated. Magnesium chloride is used on sidewalk applications, as it is more environmentally acceptable than sodium chloride. Where they exist, catch basins are cleaned on a regular basis and at the end of the winter season to remove accumulated sand.

Due to the widespread use of the public parking facilities in the county, routine sand and deicing materials treatment is provided during snow clearing operations. In an effort to reduce the discharge of these materials into the county's streams, the county's six park and ride lots, four commuter rail stations, and one bus transit facility are swept once each spring.

Sanitary Sewer Infiltration Abatement Program

The Wastewater Collection Division, an agency of the Department of Public Works and Environmental Services, manages the county's infiltration abatement program. Major activities of this program include:

- Sewer system evaluation survey, essentially consisting of wastewater flow measurement and analysis to identify areas of the wastewater collection system with excessive inflow/infiltration problems.

- Closed circuit television (CCTV) inspection of trunk sewer mains to specifically identify the defective sewer lines for repair and rehabilitation. In 2004, 228 miles of old sewer lines and 35 miles of new sewer lines were inspected.

- Repair and rehabilitation of sanitary sewer lines and manholes identified by CCTVinspection. This includes, among others, dig up repairs, manhole rehabilitation, and trenchless pipe repair technologies such as robotic, cured-in-place, and fold-and-reformed pipe rehabilitation processes. In 2004, approximately 139,000 feet of sanitary sewer lines were rehabilitated and over the past seven years this adds up to 1,039,700 feet (197 miles).

- 32 dig-up repairs and 209 trenchless point repairs were completed.

- In addition to reducing infiltration of extraneous waters into the wastewater collection system, this repair and rehabilitation program significantly extends the life of the sewer system.

Mosquitoes

In a proactive approach to mosquito surveillance and management, a Mosquito Surveillance and Management Sub-committee was formed in 2002 that includes the City of Falls Church, City of Fairfax, Town of Herndon, Town of Vienna, Health Department, Park Authority, DPWES, and other county agencies. An entomologist was employed in 2003 to coordinate the effort to suppress West Nile virus (WNV) and a company specializing in mosquito control was contracted to perform surveillance and treatment activities. It was determined that the primary vector for the transmission of WNV is a type of mosquito that primarily breeds in storm drainage catch basins and isolated containers. Therefore, the activities focused on surveillance, treatment of catch basins, and public education to enhance citizen awareness. Mosquito surveillance and catch basins treatments (three times during the season) were contracted in 2003. In 2004 all surveillance activities were brought in-house and the catch basin activities were contracted out. Information collected from the 2003 and 2004 surveillance provided data to effectively define areas of WNV activity and zero-in on appropriate future treatment areas. Treatment activities were suspended at the onset of cold weather, which suppresses mosquito and virus activity. County inspection crews supported treatment efforts by identifying suspect areas in storm drainage conveyance systems during regularly scheduled maintenance inspections. The Health Department also conducted a rigorous quality control effort and adjusted the contractor's activities so that they were consistent with program needs.

A program was maintained to educate citizens about WNV and informational handouts were developed in five languages to provide citizens and stormwater management facility owners/operators with background mosquito information and the “dos and don’ts” of mosquito management and personal protection. County staff became certified by the State Office of Pesticide Services to proctor exams and to certify field staff, which were then qualified to apply biological pesticides in storm drainage conveyance systems.